

REMARKS/ARGUMENTS

Claims 1-20 are pending in this application.

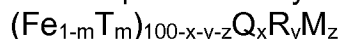
On pages 2 and 3 of the outstanding Office Action, the Examiner alleged that the Information Disclosure Statements, filed on April 24, 2006 and September 6, 2005, fail to comply with 37 C.F.R. §§ 1.97 and 1.98 and MPEP § 609. Applicants have filed an additional Information Disclosure Statement that corrects the informalities noted by the Examiner.

Applicants acknowledge that the Examiner withdrew the rejection of claims 1-20 based upon Kanekiyo et al. (EP 1 158 545) and Kanekiyo et al. (JP 2002-64009), ostensibly in view the certified English translation of the Japanese Priority Application No. 2001-354315. However, Applicants respectfully request that the Examiner acknowledge receipt of the certified translation on the record.

Claims 1-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ma et al. (US 6,332,933). Claims 1-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang et al. "The Effects of Refractory Metals on the Magnetic Properties of α -Fe/R₂Fe₁₄B-Type Nanocomposites." Applicants respectfully traverse the prior art rejections of Claims 1-20.

Applicants' Claim 1 recites:

A compound for a rare-earth bonded magnet, the compound comprising a rare-earth alloy powder and a binder,
wherein the rare-earth alloy powder includes at least about 2 mass % of Ti-containing nanocomposite magnet powder particles, and
the Ti-containing nanocomposite magnet powder particles have a composition represented by the general formula:



where T is at least one element selected from the group consisting of Co and Ni; Q is at least one element selected from the group consisting of B and C and always includes B; **R is at least one rare-earth element substantially excluding La and Ce**; M is at least one metal element selected from the group consisting of Ti, Zr and Hf and always includes Ti; and the mole fractions x, y, z and m satisfy the inequalities of: $10 \text{ at}\% < x \leq 20 \text{ at}\%$; $6 \text{ at}\% \leq y < 10 \text{ at}\%$; $0.1 \text{ at}\% \leq z \leq 12 \text{ at}\%$; and $0 \leq m \leq 0.5$, respectively,

the Ti-containing nanocomposite magnet powder particles include

at least two ferromagnetic crystalline phases, in which hard magnetic phases have an average crystal grain size of about 10 nm to about 200 nm, soft magnetic phases have an average crystal grain size of about 1 nm to about 100 nm, and the average crystal grain size of the soft magnetic phases is smaller than the average crystal grain size of the hard magnetic phases,

the Ti-containing nanocomposite magnetic powder particles include $R_2Fe_{14}B$ compound phase at 60 volume % or more, and the soft magnetic phase of the Ti-containing nanocomposite magnetic powder particles includes iron-based boride phase.
(emphasis added)

First, in Section No. 3 on page 3 of the outstanding Office Action, the Examiner alleged that “in view of the disclosure in paragraph 0176 (the last 3 lines) of the specification the claim language, ‘substantially excluding La or Ce’, e.g., claim 1, lines 12 and 13) has been interpreted to mean that the La and/or Ce content is about 0.5 at% or less.”

However, each of Ma et al. and Chang et al. disclose that the content of the rare earth element is represented by the formula “ $(Nd_{0.95}La_{0.05})$ ” (see, for example, Examples 6 and 7 of Ma et al. and Table 1 of Chang et al.). This means that the La content is 5% of the rare earth element, not 0.5% as alleged by the Examiner. In other words, Nd comprises 95% and La comprises 5% of the rare earth element. (By comparison, an La or Ce content of 0.5% of the rare earth element would be represented by, for example, the formula “ $(Nd_{0.995}La_{0.005})$ ”.)

Accordingly, neither Ma et al. nor Chang et al. teach or suggest the feature of “R is at least one rare-earth element substantially excluding La and Ce,” as recited in claim 1, wherein the term substantially excluding La or Ce means that the content of La or Ce in the rare earth element is about 0.5% or less of the rare earth element.

Second, Chang et al. is completely silent as to the percentage volume of the $R_2Fe_{14}B$ compound phase. Chang et al. teach that it is preferable to increase the percentage of Nd from 9.5 at% to 11.0 at% in order to make $Nd_2Fe_{14}B$ phase and α -Fe phase smaller. The additive refractory metal element is used to suppress the generation of borides (e.g., $R_2Fe_{23}B_3$ or Fe_3B) and to obtain a magnet including only two

phases of $\text{Nd}_2\text{Fe}_{14}\text{B}$ phase and $\alpha\text{-Fe}$ phase (see, for example, paragraphs [0106] and [0107] in Applicants' specification and page 3265, second column, second full paragraph of Chang et al.). In other words, Chang et al. do not teach a boride phase.

Accordingly, Chang et al. certainly fail to teach or suggest the features of "the Ti-containing nanocomposite magnetic powder particles include $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase at 60 volume % or more" and "the soft magnetic phase of the Ti-containing nanocomposite magnetic powder particles includes iron-based boride phase," as recited in Applicants' claim 1.

Third, Ma et al. is completely silent as to the percentage volume of the $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase and certainly fail to teach or suggest the percentage volume of the $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase is 60% or more. Ma et al. fail to teach or suggest suppressing only the growth of the $\alpha\text{-Fe}$ phase to achieve the $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase of 60% or more (see, for example, column 3, lines 18-22 of Ma et al.). That is, Ma et al. teach equally suppressing both the $\alpha\text{-Fe}$ phase and $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase resulting in equal percentages of the $\alpha\text{-Fe}$ phase and $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase.

Accordingly, Ma et al. certainly fail to teach or suggest the feature of "the Ti-containing nanocomposite magnetic powder particles include $\text{R}_2\text{Fe}_{14}\text{B}$ compound phase at 60 volume % or more," as recited in Applicants' claim 1.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Ma et al. and the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Chang et al.

Accordingly, Applicants respectfully submit that the prior art of record, applied alone or in combination, fails to teach or suggest the unique combination and arrangement of elements recited in claim 1 of the present application. Claims 2-20 depend upon claim 1 and are therefore allowable for at least the reasons that claim 1 is allowable.

In view of the foregoing remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance

Application No. 10/642,324
October 20, 2006
Reply to the Office Action dated June 20, 2006
Page 9 of 9

are solicited.

To the extent necessary, Applicants petition the Commissioner for a ONE-month extension of time, extending to October 20, 2006, the period for response to the Office Action dated June 20, 2006.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Dated: October 20, 2006

/Stephen R. Funk #57,751/
Attorneys for Applicants

KEATING & BENNETT, LLP
8180 Greensboro Drive, Suite 850
Tyson's Corner, VA 22102
Telephone: (703) 637-1480
Facsimile: (703) 637-1499

Joseph R. Keating
Registration No. 37,368

Stephen R. Funk
Registration No. 57,751